Applying Evidence in Practice

Preventing Ventilator Associated Pneumonia at Two Military Medical Centers in the Southwest

Funding: Resource Center for Excellence in Nursing
Tri-Service Nursing Research Program
C.2003.159d

Aim

Translate evidence into practice

Purpose

Determine best practices to prevent pneumonia of ventilated patients and reduce ventilator associated pneumonia

Research Questions

- What are five interdisciplinary best practices to prevent ventilator associated-pneumonia?
- What factors facilitate and hinder the implementation of VAP best practices?
- What is the relationship between adherence to five best practices and number of VAP diagnoses (rate)?

Translation of Evidence into Best Practice

Literature Search

- 352 abstracts from CINAHL/Medline after 1995
- 265 failed initial screen
  - 5 screening criteria
- 87 potentially relevant
- 18 failed second screening upon full review of study
- 69 selections of evidence extracted
- Evidenced rated using U.S. Preventive Services Task Force*

**American Journal of Preventive Medicine, 20*(Suppl.3), 21-35

Translation of Evidence
VAP Best Practices

- HOB elevated 30-45 degrees
- Oral hygiene
- Absence of condensate pooling in ventilator circuit
- Hand washing with soap & water or waterless soap
- Gloves used when chance of contact with blood or body fluids

Methods
Design

Pretest: Pre-Adoption
Best Practices (5)
APR-SEPT 03

Brooke Army Medical Center & Wilford Hall Medical Center Best Practices (5)

Best Practices Multi-foci Education Intervention

Posttest: Evaluation
Best Practices (5)
FEB-MAY 04

Total of 5 ICU Units

Methods
Pre-Adoption Strategies

- Champions: infectious disease, infection control, patient safety, nursing, respiratory therapy, critical care intensivist
- VAP leadership & clinical teams
- Local operating procedures, written standards of practice, overprints
- Oral care nurse initiated orders and kit(s)

Methods

Pre-Adoption and Post-Adoption

- Survey (self-report) of attitudes
- 2 hour observation periods and chart review of 46 ventilated patients
- Individual and small group focus sessions (3-5/unit): systems, attitudes, knowledge, and motivations

Findings

Pretest

- Descriptive
- Correlation

Posttest Forthcoming

- t-test
- logistical regression

Demographics
Observed Vent Patients

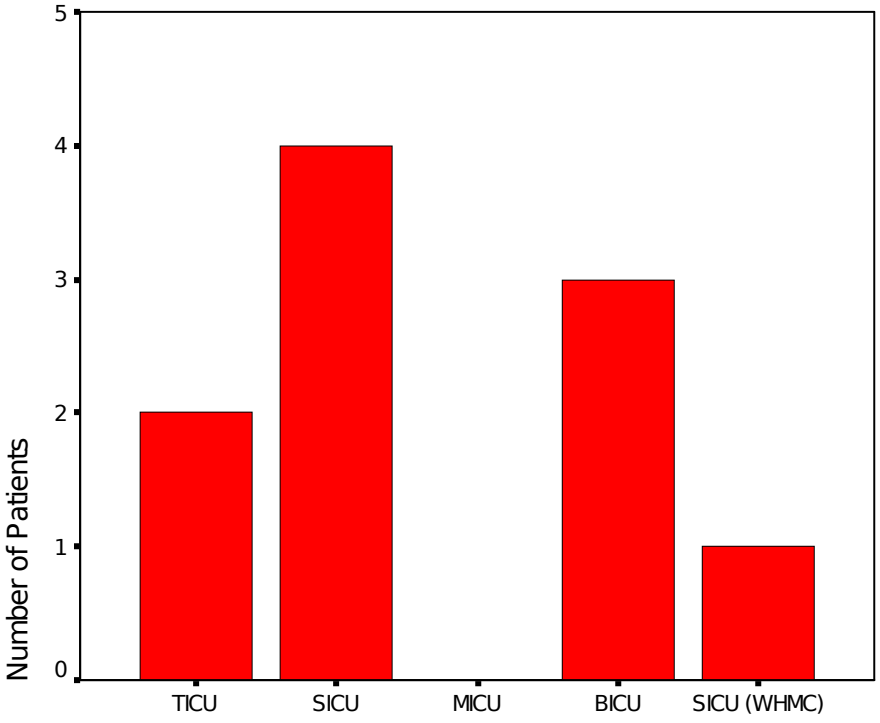
	N	Minimum	Maximum	Mean	Std. Deviation
Age of Patient	146	17	88	48.8	20.63
Hospital LOS	135	7	91	38.0	18.82
ICU LOS	140	2	56	26.6	13.13
Ventilator Days	140	2	44	19.5	10.76
Yrs Resp'ry Hx	146	0	10	1.10	3.135

Findings

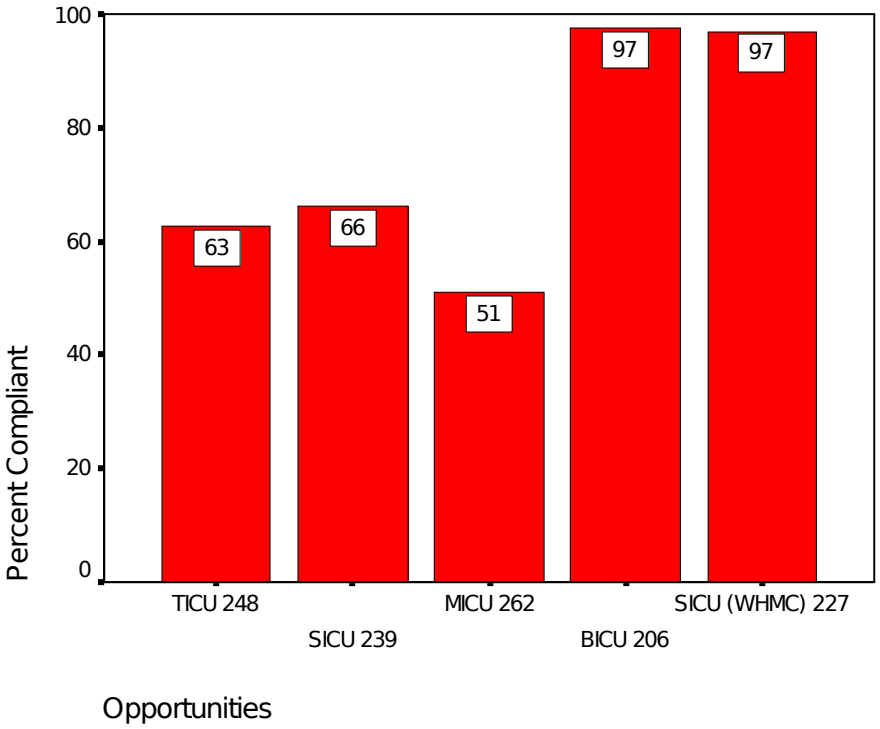
PreAdoption Barriers and Facilitators

Best Practice	Observed Compliance	Barriers to Best Practice (HCW & VAP Leadership)	
		Enabling Factors	Predisposing Factors
Hand Hygiene	Poor	Waterless soap difficult to refill; equipment in the way	Lack of awareness; irritated hands; forget
CHG Oral Care	Marginal	MD not ordering; CHG solution missing from unit	Doesn't know the significance; RN not initiating form
Absent Condsensation In Vent Circuit	Good	RN thinks it is RT's job	Doesn't know the proper technique
HOB Elevation	Good	Multiple caregivers	Doesn't know important
Glove Usage	Marginal	Gloves wrong size; not available	

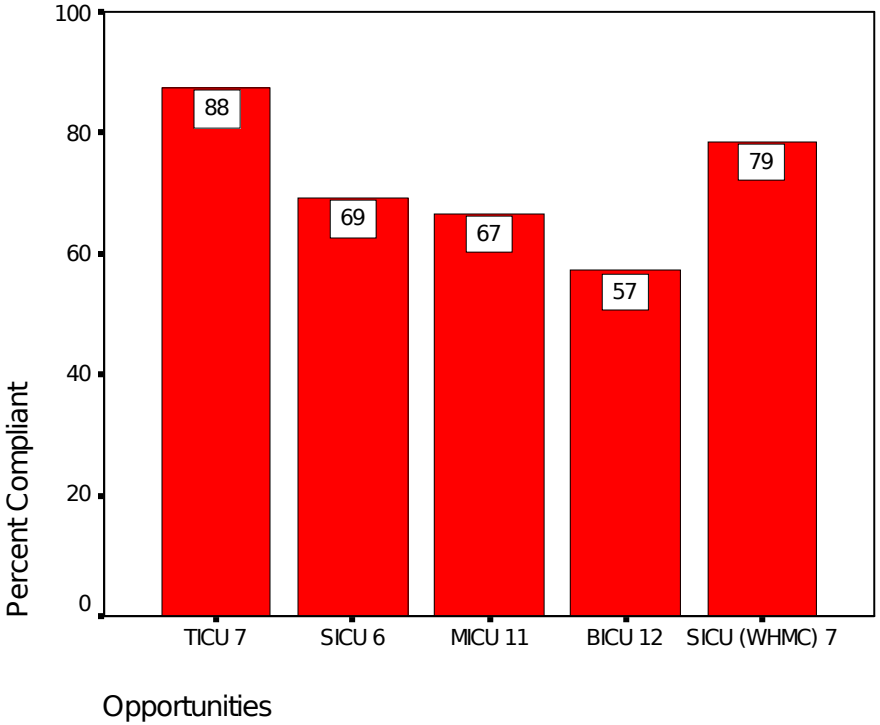
VAP Diagnosis



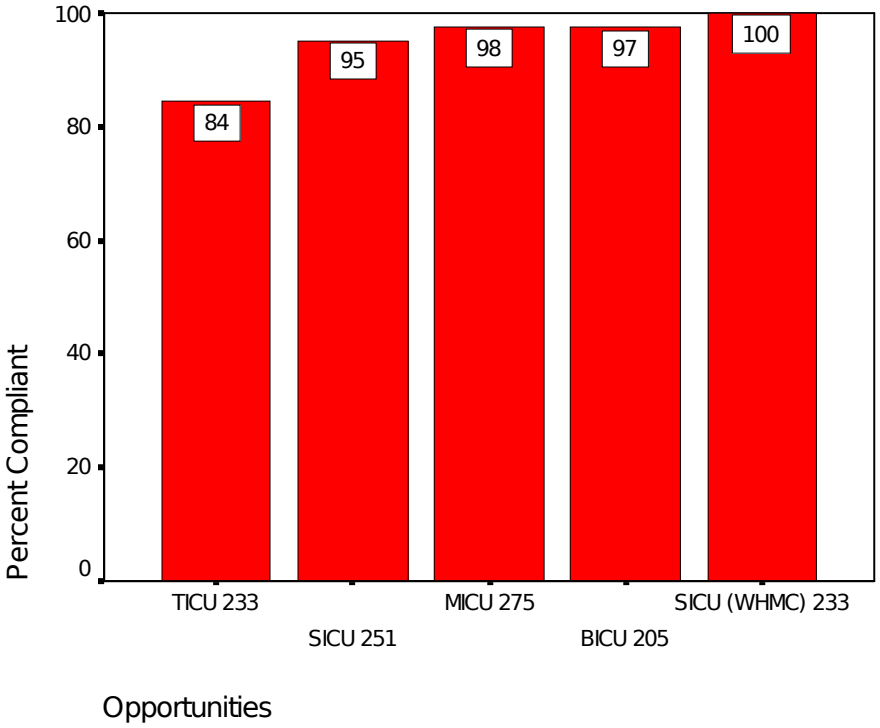
Head-of-Bed Compliance



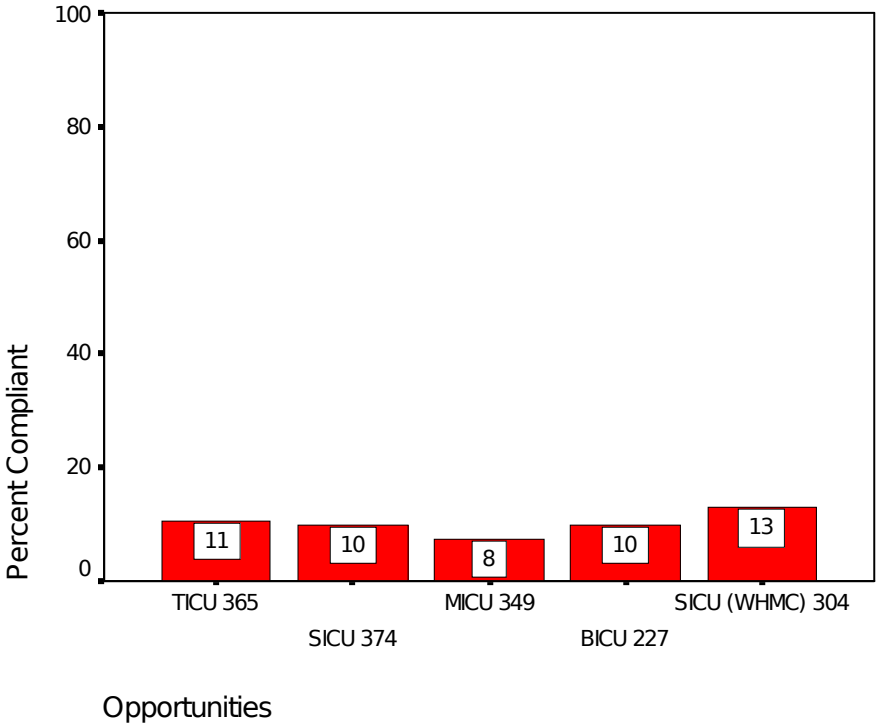
Oral Care Compliance



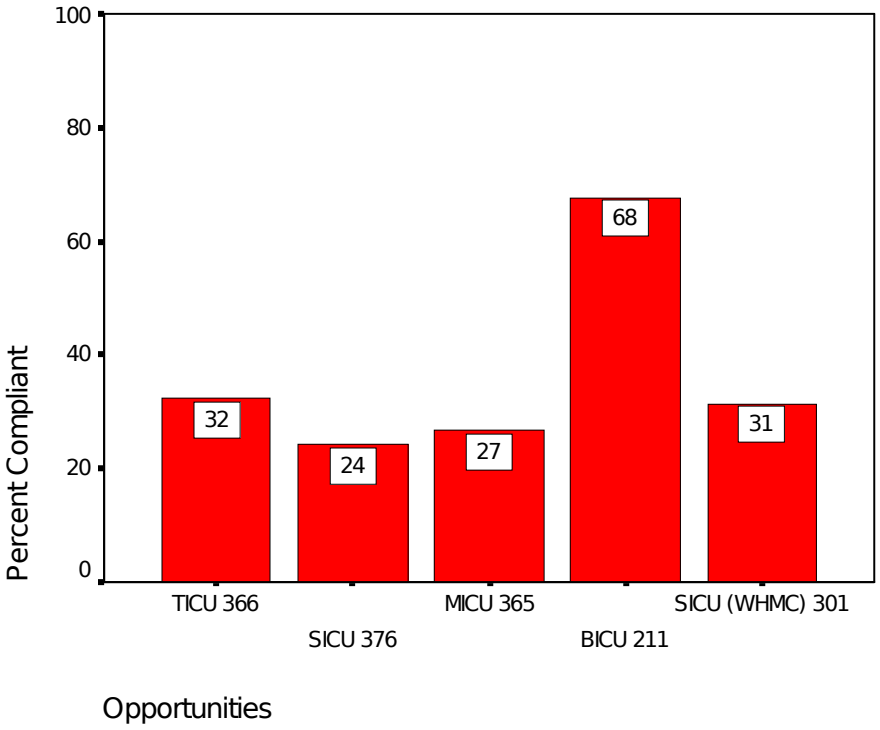
Empty Condensate Compliance



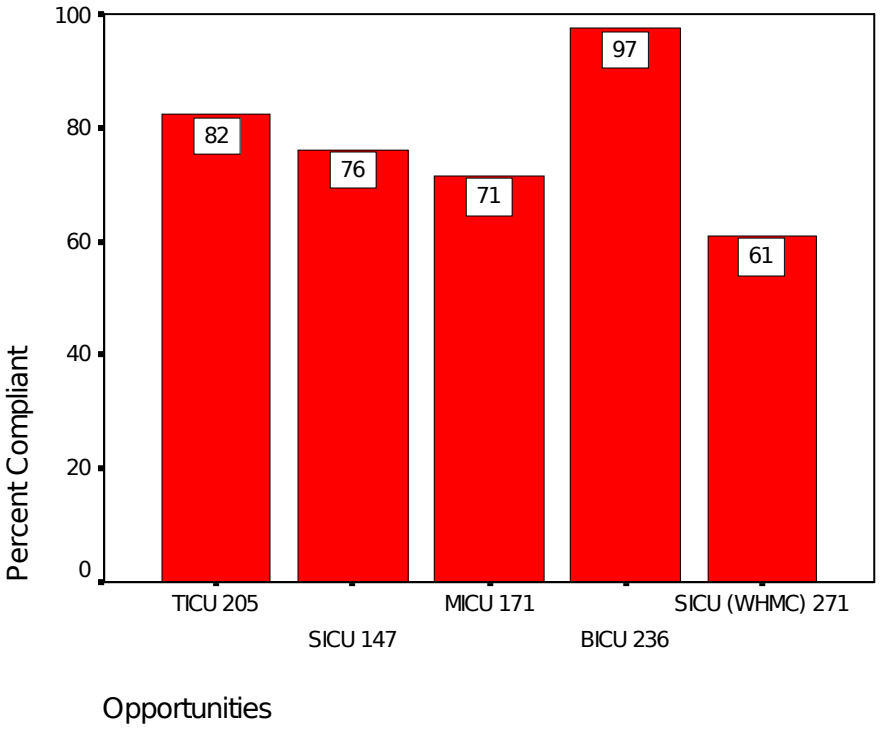
Handwashing *Before* Patient Contact



Handwashing *After* Patient Contact



Glove Use Compliance



Relationships to VAP

Diagnosis

Chi-Square

	p Value
Hospital	
ICU Type	0.001
ICU Number	0.001
Cuff Pressure Documentation	
Circ Change	
In-Line Suction Changed	
Admission Type	0.070
Gender	
In-Hospital Transfer	
Readmission to ICU	
Reintubated	0.028
Enteral Feedings	
Separate Suction	
Weaning Protocol Order	
Paralytic Protocol Order	
Sedation Protocol Order	

Relationships to VAP

Diagnosis

ANOVA

	p Value
HOB Compliance	0.039
Oral Care Compliance	0.248
Empty Cond. Compliance	0.034
Hand Wash Before Compliance	
Hand Wash After Compliance	
Glove Use Compliance	
APACHE	**0.000**
Age	0.020
Respiratory History	0.008
Ventilator Days	
LOS ICU	
LOS Hospital	
VAP Rate	0.029

Findings

PreAdoption

- Descriptive
- Correlation

Post-Adoption Forthcoming

- Descriptives
- Relationships
- t-test
- logistical regression

Conclusions

- Elevation of **head of bed**, vent tubing empty of **condensate**, **reintubation**, level of **severity**, **age**, and **respiratory history** appear to affect VAP
- Higher sample size needed to determine effect of oral care on VAP
- Applying evidence is more than a lit review w/inservices
- Multiple methods needed to understand uptake of best practice adoption and consistent application
- Strategies for continued behavior adherence to best practices in military healthcare system imperative to manage high-turnover of change champions
- One year of time needed for multi-foci intervention (2-3yrs)

Questions

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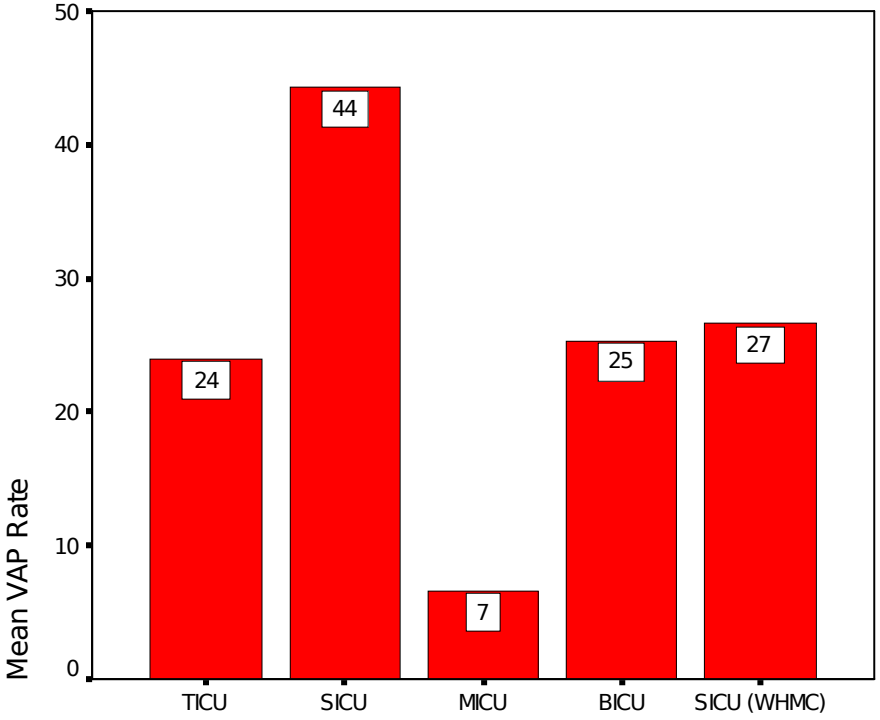
VAP *Rate*


Mean VAP Rate
50
40
30
20
10
0
24
44
7
25
27
TICU
SICU
MICU
BICU
SICU (WHMC)